WHAT IS CLAIMED IS:

1 74. A method for regulating fluid flow in a device that conducts fluid through one
2 or more capillary channels, comprising:

3 introducing fluid into a capillary channel comprising (i) a first capillary region
4 comprising a hydrophilic surface and (ii) a second capillary region comprising a
5 hydrophobic surface adjacent to said first capillary region, whereby fluid flows
6 through said first capillary region to contact said hydrophobic surface.

7 75. The method of claim 74, wherein said device further comprises a third
8 capillary region comprising a hydrophilic surface adjacent to said second capillary
9 region, wherein said hydrophobic surface controls the rate of flow of said fluid into
10 said third capillary region.

11 76. The method of claim 75, wherein said hydrophobic surface delays fluid flow
12 into said third capillary region until rendered hydrophilic.

13 77. The method of claim 74, wherein said device comprises a plurality of capillary
14 channels, one or more of which comprise a region comprising a hydrophobic surface.

15 78. The method of claim 75, wherein said device further comprises a vent.

16 79. A method for regulating fluid flow in a device that conducts fluid through one
17 or more capillary channels, comprising:

18 contacting said fluid with one or more hydrophobic regions on a capillary surface that
19 alter a rate or direction of said fluid flow within said device in comparison to a rate or
20 direction of fluid flow within said device in the absence of said hydrophobic region.

21 80. The method of claim 79, further comprising contacting said fluid with a first
22 capillary region and a second capillary region adjacent to said first capillary region,
23 wherein a difference in capillarity of said first capillary region compared to said
24 second capillary region alters a rate or direction of said fluid flow within said device

in comparison to the rate or direction of said fluid flow within said device in the absence of said difference in capillarity.

81. The method of claim 79, further comprising contacting said fluid with a reagent dried on a surface of the device, whereby said reagent dissolves into said fluid, thereby lowering the surface tension of said fluid.

82. The method of claim 79, wherein said device comprises a plurality of capillary channels.

83. The method of claim 79, wherein one or more of said hydrophobic regions are flanked by hydrophilic regions.

84. The method of claim 79, wherein at least one of said hydrophobic regions alter the rate of flow within said device.

85. The method of claim 84, wherein said hydrophobic region(s) that alter the rate of flow within said device retard fluid flow until rendered hydrophilic.

86. A device that conducts fluid through one or more capillary channels, comprising:

a capillary channel comprising (i) a first capillary region comprising a hydrophilic surface and (ii) a second capillary region comprising a hydrophobic surface adjacent to said first capillary region.

87. The device of claim 86, wherein said device further comprises a third capillary region comprising a hydrophilic surface adjacent to said second capillary region.

88. The device of claim 86, wherein said hydrophobic surface alters a rate or direction of fluid flow within said device.

89. The device of claim 86, further comprising a reagent dried on a surface of the device that, when dissolved into reagent dissolves into fluid within said device, lowers the surface tension of said fluid.

90. The device of claim 86, wherein said device comprises a plurality of capillary channels.

91. A method for regulating fluid flow in a device that conducts fluid through one or more capillary channels, comprising:

introducing fluid into a capillary channel comprising (i) a first capillary region comprising a surface having a first contact angle and (ii) a second capillary region adjacent to said first capillary region comprising a surface having a second contact angle less than that of said first contact angle, whereby fluid flows through said first capillary region to contact said second capillary region.

92. The method of claim 91, wherein said device further comprises a third capillary region adjacent to said second capillary region comprising a surface having a third contact angle greater than that of said second contact angle, wherein the rate of flow of said fluid into said third capillary region is regulated by the flow of fluid through said second capillary region.

93. The method of claim 92, wherein said second capillary region delays fluid flow into said third capillary region until said second contact angle is increased.